Addressing Health Care Workers' Mental Health: A Systematic Review of Evidence-Based Interventions and Current Resources

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Background. Mental health is declining in health care workers.

Objectives. To provide a comprehensive assessment of intervention literature focused on the support and treatment of mental health within the health care workforce.

Search Methods. We searched online databases (e.g., Medline, PsycINFO).

Selection Criteria. We selected manuscripts published before March 2022 that evaluated the target population (e.g., nurses), mental health outcomes (e.g., burnout, depression), and intervention category (e.g., mindfulness).

Data Collection and Analysis. Of 5158 publications screened, 118 interventions were included. We extracted relevant statistics and information.

Main Results. Twenty (17%) earned study quality ratings indicating design, analysis, and implementation strengths. Randomized controlled trials were used by 52 studies (44%). Thirty-eight percent were conducted in the United States (n = 45). Ninety (76%) reported significant changes, and 46 (39%) reported measurable effect sizes. Multiple interventions significantly reduced stress (n = 29; 24%), anxiety (n = 20; 17%), emotional exhaustion or compassion fatigue (n = 16; 14%), burnout (n = 15; 13%), and depression (n = 15; 13%).

Authors' Conclusions. Targeted, well-designed mental health interventions can improve outcomes among health care workers.

Public Health Implications. Targeted health care–focused interventions to address workers' mental health could improve outcomes within this important and vulnerable workforce. (*Am J Public Health*. 2024;114(S2):S213–S226. https://doi.org/10.2105/AJPH.2023.307556)

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PLAIN-LANGUAGE SUMMARY

We searched research publications to locate interventions that aimed to improve mental health among health care workers, such as nurses and medical doctors. The interventions were designed to offer support, such as training or counseling, to health care workers who were having symptoms of poor mental health, such as burnout, stress, or anxiety. We screened 5158 science journal articles and found 118 different interventions that had been offered to health care workers. Each article was evaluated to rate the degree to which they used accepted scientific methods of research. Most studies used strong research designs and contained valuable information about methods to improve mental health among health care workers. More than one third of the interventions were conducted in the United States, and most of the others were conducted in in Canada or Europe. Several interventions were successful in improving symptoms of stress, burnout, anxiety, and depression among health care workers.

Since 2020, mental health in the workplace has ranked among the most critical areas of research and practice by major organizations worldwide.[1,2] In any given year, mental health issues create an economic burden in the United States of $225 billion attributable to costs associated with medical care and lost productivity.[3] In the general workforce, mental

health issues (e.g., distress, burnout) and mental illnesses (e.g., anxiety, depression) are associated with increased absenteeism and presenteeism (i.e., lost productivity or reduced performance), turnover, and increased rates of short- and long-term disability.[4–6]

Within the health care sector, the consequences of poor worker mental health have never been more troubling. Before COVID-19, more than 50% of clinicians reported experiencing some level of burnout because of challenges associated with short staffing, long hours, high job demands, and compassion fatigue.[7–9] This number rose to 76% within the first year of the pandemic.[10] Benefits surrounding mental illness (i.e., diagnosable psychological disorders classified within the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* [*DSM-5*; Washington, DC: American Psychiatric Association; 2013]) have grown substantially, with many organizations now offering funding for psychological services.[11] Those who invest in mental health support and intervention see an estimated return on investment (ROI) of $4 per dollar invested.[12]

The purpose of this systematic review is to provide information from evidence-based literature describing mental health interventions that have been evaluated within health care populations and to evaluate the quality of those interventions. The target audience for implementation of this review is academicians and practitioners in public health, health care administrators, leaders, and safety and human resources professionals.

METHODS

For this review, we considered all relevant peer-reviewed and gray literature describing workplace mental health interventions targeting health care workers. We defined 3 key operational definitions by the following search terms (* indicates truncation, which allows for inclusion of all terms that begin with a specified string of characters):

- Target population: physician, nurse, doctor, surgeon, provider, clinician, resident, "first responder," "health care worker," "healthcare worker," "care provider," "home care worker," "homecare worker," "home health aide," "hospice worker," "health aide"
- Mental health: depress*, burnout, anx*, fatigue, stress, distress, strain, satisfaction, "quality of life," well-being/wellbeing/"well being"/"well-being," "mental health"
- Intervention: intervention, program, training, computer-based, online, resource, app, program, "peer support," "support group," "social support," "supervisor support," policy, redesign, "work redesign," "organization level," "individual level," "system level"

Key terms were made intentionally broad to include all medical professions, intervention types, and health care settings. Articles were gathered and initially screened for relevance by a senior research associate with advanced expertise in systematic review methodology (LA). The following sources were searched to identify potentially relevant publications, using an OR/AND search strategy combining the terms listed previously:

- Ovid MEDLINE ALL
- PsycINFO
- PubMed
- National Institute for Health and Care Excellence
- Agency for Healthcare Research and Quality Project Database
- Patient-Centered Outcomes Research Institute Project Database
- National Institute for Occupational Safety and Health Project Database
- Effective Healthcare Program
- Google Scholar and DuckDuckGo

The initial search placed no restrictions on language, location, or time, searching all peer-reviewed and gray literature up to March 2022. We considered all studies employing either a pre–post or post-only design to evaluate an intervention (broadly defined), including randomized controlled trials, quasi-experimental studies, qualitative post hoc evaluations, case studies, and program descriptions that included a data collection component. We mined systematic reviews and meta-analyses in health care mental health for additional references.[13–29]

We imported all relevant literature into Zotero[30] and Covidence[31] (systematic review software). Articles were rated by at least 2 senior researchers (WKA, JD, LA). In the first screening phase, articles were rated for inclusion or exclusion based on titles and abstracts (scale: Yes, No, Maybe). Second, a full-text review was conducted for articles rated as "Yes" or "Maybe" during the abstract review phase. Full publications were reviewed in depth to determine whether they met inclusion criteria: (1) recruited health care workers (broadly defined), (2) measured 1 or more mental health–related outcomes, and (3) introduced a mental health–focused intervention (e.g., resource, tool, exercise, policy, program, training) of some form. Exclusion criteria were (1) the intervention was not specific to mental health (e.g., job performance, patient care skills training), (2) the

sample did not include at least 1 type of medical personnel, and (3) the full publication was not available in English.

Included articles underwent a quality rating process using a slightly adapted version of the validated Downs and Black (D&B) measure.[32] The final D&B measure consisted of 25 items to rate articles' study quality, external validity, internal validity—bias, internal validity—confounding, and power. A final item was added to the rating process to assess the raters' confidence (1 = not at all confident; 4 = very confident) that the true intervention effect lies close to the authors' estimate of the effect. This item was derived from the GRADE rating protocol.[33]

We analyzed level of agreement (percentage) and interrater reliability (IRR; Cohen's κ)[34,35] to assess whether raters met the desired threshold of 80% agreement at each phase of the process. Initial IRR (Cohen's κ) was 0.79 during abstract review, 0.76 during full-text review, and 0.42 for the D&B study quality rating assessment (initial % agreement = 85%; R2 = 0.76). Following completion of the D&B rating and analysis phase, the team discussed points of disagreement, reconsidered the literature quality, and produced a revised consensus used in the final data tables (revised D&B IRR = 0.84).

RESULTS

The search yielded 5158 publications (4951 peer-reviewed) for preliminary screening (single-reviewer). After removing duplicates and irrelevant publications (e.g., patient-focused, nonwork setting), 628 abstracts were screened for inclusion, and 211 articles underwent full-text review (Figure 1).

One hundred twenty-two publications (describing 118 interventions) met inclusion criteria. All included publications were peer-reviewed articles.

Study quality, assessed by the D&B criteria, had a maximum of 25 points available; the 3 highest rated[36–38] received 22 points. Seventeen publications earned D&B quality ratings between 20 and 21 (14%).[39–55] Forty-eight (41%) were rated between 15 and 19[56–103]; the remaining 42% were rated 14 or below.[104–153] Overall, 13 articles (11%) received the highest confidence rating (4) while 19 (16%) received a rating of 3.5 (Table 1).

Study Design

Most interventions employed a randomized controlled (n = 52; 44%) trial or quasi-experimental design (n = 50; 42%), defined as either (1) a single-group study design (no comparison group) with 2 data collection timepoints or (2) a multigroup study with a single timepoint for data collection (postintervention only).

Setting

Evaluations were conducted in a hospital setting (n = 85; 72%), online (n = 15; 13%), at a nonhospital facility (n = 10; 8%), or miscellaneous (e.g., multiple; telephone, mail, unspecified; n = 8; 7%). Programs were typically implemented and accessed during work hours. Studies were conducted in 25 countries. Most interventions were conducted in the United States (n = 45; 38%), Italy, and Canada (n = 9 each; 8%).

Sample Sizes

The number of participants in the 118 interventions ranged from 11 to 1575. Forty-six (38%) had fewer than 50 participants (with 7 having fewer than 20); 27 (23%) had between 51 and 100 participants, and 27 (23%) had between 101 and 249 participants. Eighteen interventions (15%) had 250 or more participants; including 4 (3%) with 1000 or more (Table A, available as a supplement to the online version of this article at https://ajph.org).

Health Care Worker Occupation

Nurses were recruited to the interventions most frequently (n = 78; 66%), followed by physicians (n = 41; 35%). Twenty-two (19%) did not provide specific demographics on job titles.

Intervention Category

From the 118 interventions, 7 categories emerged:

1. coping skills development (e.g., resilience-building, help-seeking, responding to stressors),
2. mindfulness (e.g., mindfulness and similar practices such as directed meditation),
3. health literacy and anti-stigma (e.g., mental health or general health-related awareness, stigma reduction),
4. peer support (e.g., focus on teams, relationship building, or support between coworkers),
5. organizational and system level (e.g., focus on policies, cultural change, and large-scale resources),
6. reflection and relaxation (e.g., writing or artistic exercises, creativity, and conveying gratitude), and
7. medical (e.g., medical, including pharmaceutical, treatment).

Thirty-one (26%) of the intervention methods fit into multiple categories. The number and percentage of categories is shown in Table 2 (see note).

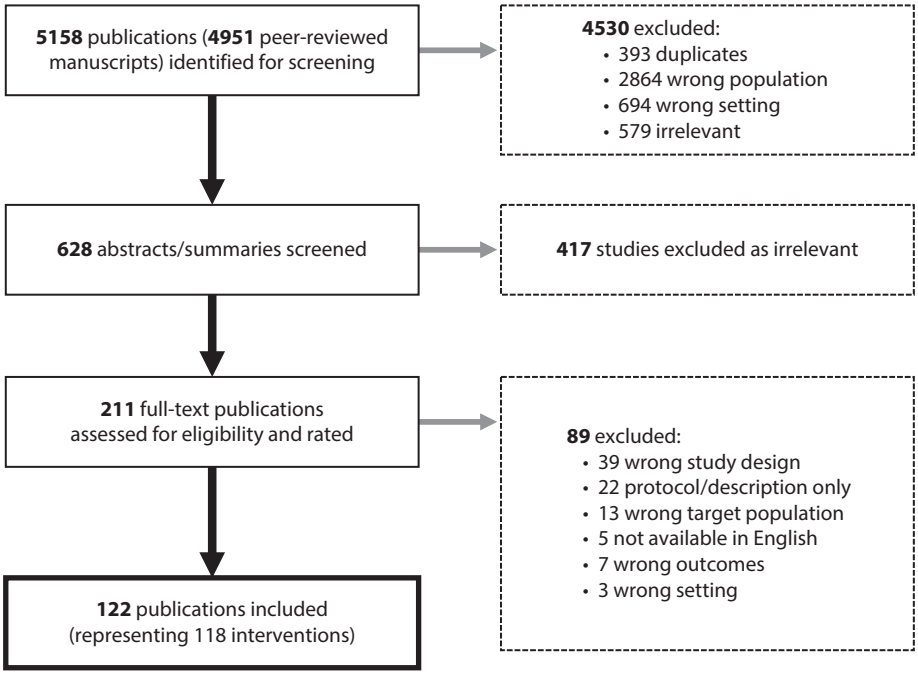

FIGURE 1— PRISMA Figure Depicting the Articles Examined and Included in the Systematic Review

Note. PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Prevention Category

Workplace mental health interventions are often categorized as primary, secondary, or tertiary prevention. Primary interventions are designed to prevent illness, injury, and disease before they occur.[154] Secondary interventions, often considered "early interventions," are designed to treat an existing illness or injury, slow its progression, and help the individual recover. Tertiary interventions are designed to help people manage the long-term, and often complex, health problems associated with an injury or illness that has progressed to a point that is debilitating.

Most articles did not specify which prevention category they were targeting. To assess this factor, an expert in mental health interventions (JD) coded the literature into prevention categories. Some interventions are categorized as hybrid format, both primary and secondary or secondary and tertiary, because of the dual purpose of the intervention (e.g., an intervention focused on both preventing and reducing symptoms). Twenty interventions provided primary, 40 secondary, and one tertiary prevention. The number and percentage of categories are shown in Table 2.

TABLE 1— Number of Mental Health Intervention Articles Meeting Quality and Confidence Ratings by Ranges

	No. of Articles (%, Rounded)
Quality rating[a] (D&B)	
20–22	20 (17)
15–19	48 (41)
6–14	50 (42)
Confidence rating[b]	
4	13 (11)
3.5	19 (16)
3	24 (20)
2.5	22 (19)
2	26 (23)
1.5	8 (7)
1	6 (5)

Note. D&B = Downs and Black.[32] Larger number = better rating.
[a]Quality rating assessed study quality, external validity, internal validity—bias, internal validity—confounding, and power.
[b]Confidence rating assessed raters' confidence that the true intervention effect lies close to the authors' estimate of the effect. Ratings calculated as a mean of two raters.

TABLE 2— Number of Mental Health Interventions by Intervention and Prevention Category

	No. of Interventions (%)
Intervention category	
Coping skills development	38 (32)
Health literacy and anti-stigma	25 (21)
Mindfulness	33 (28)
Peer support	16 (14)
Organizational and system level	11 (9)
Reflection and relaxation	25 (21)
Medical	4 (4)
Prevention category	
Primary	20 (17)
Primary/secondary	44 (37)
Secondary	40 (33)
Secondary/tertiary	13 (11)
Tertiary	1 (1)

Note. Thirty-one intervention methods fit within 2 or more intervention categories. These 31 interventions are counted multiple times within this table, leading to a total of 152.

Individual Versus Organizational Interventions

We coded interventions as organizational (e.g., changes to the work environment to support employee mental health), individual (e.g., education or training on coping or self-help strategies to prevent or reduce mental health symptoms), or a combination of the 2. Individual interventions predominated (n = 98; 83%), while only 8 interventions (7%) were coded as organizational and 12 (10%) judged to address both.

Mental Health Outcomes

Table 3 lists the mental health–related outcomes measured across the intervention articles. The most common mental health outcomes were stress (n = 48; 41%), burnout (n = 40; 34%), and anxiety, depression, and emotional exhaustion or compassion fatigue (each had an n = 31; 26%); this is consistent with the most frequently identified mental health issues reported by health care professionals before and during the COVID-19 pandemic (2020–2022).[9,12]

Statistically Significant Changes and Effect Sizes

Statistically significant improvements were reported by 90 (76%) of the interventions. Measures of the effect size were reported, or in some cases calculated by the authors using reported data and an effect size calculator,[155] by 46 interventions (39%). Effect sizes were calculated with Cohen's d (small = 0.2; medium = 0.5; large = 0.8),[156] η-squared (η^2) or partial η^2 (small = 0.01; medium = 0.06; large = 0.14),[157] the correlation statistic R^2 (small = 0.00; medium = 0.03; large = 0.14),[156,157] and delta (Δ; small = 0.2; medium = 0.5; large = 0.8).[158] See Table 3 for effect sizes by outcome.

Overall, several interventions reported significant changes in key outcome measures: stress (29 interventions; 14 effect sizes, 5 large), anxiety (20 interventions; 12 effect sizes, 6 large), depression (15 interventions; 8 effect sizes; 4 large), emotional exhaustion or compassion fatigue (16 interventions; 11 effect sizes, 4 large), and burnout (15 interventions; 6 effect sizes, 2 large). In addition, multiple interventions improved most measures in the category of general health and well-being. See Table 3 and Table B (available as a supplement to the online version of this article at https://ajph.org).

Time Commitment for Participants

Many (n = 90; 76%) of the publications noted the amount of time spent on the intervention at work by the participants (listed in Table A). The range was 0 (conducted outside work time) to 50 hours; 55 interventions (47%) required 10 or fewer hours.

DISCUSSION

The 118 interventions (122 publications) described in this review focused on outcomes related to general mental health and well-being, as well as mental health issues and illnesses, including depression, anxiety, psychological strain, stress, burnout, and compassion fatigue. Findings suggest that targeted, well-designed mental health–focused interventions have the potential to lead to significant improvements in mental health outcomes among health care workers.

Interventions That Improved Outcome Measures

Of the 118 interventions included in this review, 97 were associated with

TABLE 3— Mental Health Outcomes Targeted by Interventions

Outcomes	No. of Interventions	No. With Significant Changes[a]	No. With Effect Sizes[b]	Effect Size, No.		
				Large	Medium	Small
General health and well-being						
Sleep/exhaustion	12	7	3	0	2	1
Mental health	14	5[c]	4[c]	2[c]	1[c]	1
General health	12	8[c]	4	2	1	1
Affect	10	7	6	2	4	0
Well-being	13[c]	10[c]	7	4	1	2
Quality of life	11	8	7	4	2	1
Somatization	3	2	0	0	0	0
Stress and strain						
Stress	48	29	14	5	6	3
Distress	14	9	4	3	0	1
Posttraumatic stress disorder	6	2	1	1	0	0
Strain	5	3	2	1	0	1
Depression	31	15	8	4	3	1
Anxiety	32	20[c]	12[c]	6[c]	2	4
Burnout and compassion fatigue						
Burnout	40	15	6	2	3	1
Emotional exhaustion or compassion fatigue	30	16	11	4	2	5
Emotions and attitudes						
Psychosocial functioning	5	2	1	1	0	0
Happiness	2	1	0	0	0	0
Anger	2	1	0	0	0	0
Mental health stigma	2	2	0	0	0	0
Resilience and coping						
Social support	15	8	2	1	0	1
Coping	10	1	1	0	1	0
Demands	6	1	1	0	1	0
Support seeking	5	2	0	0	0	0
Drinking behaviors	6	3	0	0	0	0
Work–life balance	7	3	2	0	1	1
Resilience	7	6	4	1	2	1
Mindfulness						
Mindfulness	13	8	6	2	3	1
Self-compassion	7	5	4	0	2	2
Psychological flexibility	4	2	1	0	1	0
Awareness	2	2	0	0	0	0
Self-efficacy and self-esteem						
Confidence	10	7	3	1	1	1
Self-efficacy	8	5	2	1	1	0
Inadequacy	1	1	0	0	0	0

Continued

TABLE 3— Continued

Outcomes	No. of Interventions	No. With Significant Changes[a]	No. With Effect Sizes[b]	Effect Size, No.		
				Large	Medium	Small
Civility and relationships						
Trust	1	1	1	1	0	0
Civility/incivility	5	5	2	1	0	1
Empathy	2	2	2	0	2	0
Respect	2	2	1	1	0	0

[a]Number of interventions with at least 1 significant change in a measure over time from baseline to follow-up or in rare cases from postintervention to a subsequent follow-up.
[b]Number of studies that included effect sizes.
[c]Two intervention methods in 3 studies produced 2 differences, and 2 of those produced 2 effect-size results. Effect sizes were defined as follows: Cohen's d: small = 0.2; medium = 0.5; large = 0.8; η^2 or partial η^2: small = 0.01; medium = 0.06; large = 0.14; R^2: small = 0.00; medium = 0.03; large = 0.14; and Δ: small = 0.2; medium = 0.5; large = 0.8. Details are noted in Table A (available as a supplement to the online version of this article at https://ajph.org).

significant reductions in mental health outcome measures highly relevant to the health care sector (i.e., stress: n = 29; anxiety: n = 20]; emotional exhaustion or compassion fatigue: n = 16; burnout: n = 16; and depression: n = 15). Randomized controlled trial designs were used in several of these studies, showing improvement in stress (n = 17), emotional exhaustion or compassion fatigue (n = 10), depression (n = 9), anxiety (n = 9), and burnout (n = 7). Importantly, nearly one fourth (n = 27; 23%) of the observed improvements in mental health outcome measures met the criteria for a large effect size, and 12 (30%) of the 40 interventions rated 18 (D&B) or better produced large effect-size changes in outcome measures including all of the 5 highly relevant outcomes, indicating that the changes reported by participants were large enough to be meaningful in the real world.[156] By participating in interventions associated with large effect sizes in mental health outcomes, health care workers may experience real, perceptible improvements in their mental health.

Interventions that incorporated mindfulness and coping skills development using formal therapeutic approaches (e.g., acceptance and commitment therapy [ACT], cognitive behavioral therapy [CBT]) tended to result in the most significant changes in measures of mental health outcomes. Though there were proportionately fewer, relaxation and reflection interventions with techniques that varied much more widely (e.g., art therapy, expressive writing, yoga) were also associated with positive changes in mental health outcome measures. Mindfulness, coping skills development, and relaxation and reflection interventions repeatedly influenced measures of burnout, stress, depression, emotional exhaustion, and general well-being (Table A).

Interventions that incorporated multiple foci (e.g., increased awareness of mental health and training for workers on how to improve coping skills) were also associated with improvements in mental health outcome measures. For instance, interventions focused solely on education and awareness related to health literacy and anti-stigma rarely resulted in changes to mental health outcome measures. Instead, they tended to be associated with improvement in more general outcomes, such as improved confidence and reduced mental health stigma. However, when combined with other intervention strategies, such as coping skills development, reflection and relaxation, and peer support, interventions using health literacy and anti-stigma strategies were associated with improvements in mental health measures. Although there were few interventions that employed medical intervention methods (e.g., cannabidiol therapy, transcranial magnetic stimulation), these intervention strategies were also associated with significant reductions in measures of anxiety and depression, indicating significant promise.

Several interventions reported multiple outcome measure changes with large effect sizes: Civility, Respect, and Engagement at Work (CREW; 7 outcomes); Stress Management and Resiliency Training (SMART; 5 outcomes); MINDBODYSTRONG and Brief Mindfulness-Based Stress Reduction (MBSR; 4 each); and Mindfulness-Based Resilience Training (MBRT), Acupressure and Emotional Freedom Techniques (EFT), expressive writing, and enhancing resilience (3 each). Considering specific mental health outcomes, 9 interventions produced large effect size changes for measures of stress, strain, or distress (i.e.,

gratitude journaling, ACT+CBT, repetitive transcranial magnetic stimulation (RTMS), Acupressure and EFT, SMART, MINDBODYSTRONG, reflective debriefing, enhancing resilience, ACT); 5 produced large effect-size changes in anxiety measures (Acupressure and EFT, SMART, MINDBODYSTRONG, stretch-release and cognitive relaxation, Life and Death—The Same Preparation), and in burnout and emotional exhaustion or compassion fatigue measures (MBRT, Mental Health Promotion, Acupressure and EFT, Promote Professionalism and Mental Health, MBSR); and 4 resulted in large changes in depression (RTMS, expressive writing, MINDBODYSTRONG, enhancing resilience). All but 3 of these interventions were designed as randomized controlled trials, and 5 of the interventions listed for stress, 2 for anxiety, 1 for depression, and 4 for emotional exhaustion or compassion fatigue and burnout carry D&B ratings of 18 or more.

Among the most highly rated studies (D&B quality ratings), interventions that focused on coping skills development and mindfulness had the most studies (n = 26; 22% each) to demonstrate improvements in mental health outcome measures. Coping skills development interventions were also associated with the highest number of large intervention effect sizes (n = 6) among the 5 key outcome measures, and mindfulness was associated with 4. Following coping skills development interventions was "reflection and relaxation" (n = 20; 17%; 4 large effect sizes in key outcome measures). The most impactful coping skills development interventions were SMART (7 outcome measures improved, 7 with effect sizes, 5 large; D&B rating = 20; though a quasi-experimental design) and Acupressure and EFT (3 outcomes, 3 with effect sizes, all large; D&B = 19; randomized controlled trial), and the most impactful mindfulness interventions were Mindfulness-Based Cognitive Therapy for Life (6 outcomes, 6 with effect sizes, 1 large; D&B = 21; randomized controlled trial) and ACT+CBT (4 outcomes, 4 with effect sizes, 2 large; D&B = 19; randomized controlled trial).

Interventions that targeted peer support or organizational- and system-level improvements tended to produce mixed findings. Some peer-focused interventions demonstrated medium or large effect size results on multiple work outcome measures (e.g., turnover intentions, job satisfaction) and personal outcomes (e.g., affect; see CREW), but not on mental health outcomes. Others only had small to medium effect-size changes on mental health, but none on work. Patterns of results were similar for organizational- and system-level interventions unless combined with individual intervention strategies, which tended to be associated with mental health improvements—as was the case with multifocused interventions incorporating peer support strategies.

It is important to acknowledge that a statistically significant improvement in a mental health outcome does not necessarily translate to a significant, recognizable, or universal improvement in health for all participants. Organizations must recognize that intervention "effectiveness" will vary among workers depending on outcomes of interest, individual differences, and the status of employees' mental health at the onset of the intervention.

Study Quality

Most reviewed evaluations had high study quality ratings; 20 earned a high-quality rating (greater than 19 on a 25-point scale), and another 48 earned relatively high ratings (15–19) for a total of 58% of the interventions, based on research methods and design elements, indicating design and implementation strengths. Among the 118 interventions, there were 52 randomized controlled trials and 50 quasi-experimental designs. Thus, 44% of the evaluations used the most robust design methods used in field research, while an additional 42% used strong designs but without the strength of randomization to avoid biases. Similarly, 32 (27%) earned the authors' confidence ratings of 3.5 or higher on a 4-point scale. Findings associated with higher-quality studies, such as those that are adequately powered and used more rigorous evaluation methods (e.g., randomized controlled trials), are more likely to be reflective of true, and potentially replicable, benefits of their associated interventions.

The findings associated with lower-quality study designs may still be valid and reliable, but it is more challenging to determine whether findings, or a lack thereof, were attributable to chance, inadequate power, or confounding variables. For instance, some of the evaluations lacked rigorous designs, used underpowered sample sizes (few reported power analyses), did not use control groups or intent-to-treat analytic strategies, and did not explore the long-term duration of the intervention effects. Most evaluations (62%) relied on 100 or fewer participants, with 39% using 50 or fewer participants. Only 15% recruited more than 250 participants. These methodological challenges make it unclear whether nonsignificant outcomes were the result of underpowered samples or ineffective interventions.

Availability and Cost

Cost-related justifications or ROI calculations were rare among the evaluated

interventions. Of the 6 that included a measure of ROI, 4 saw significant improvements in worker attendance (e.g., absences). When implementing intervention programs, organizations should aim to weigh the ratio of costs to benefits associated with intervention participation.

Nearly one third (32%) of the interventions are described in sufficient detail to enable implementation or are available from the intervention authors. Of those that were not adequately described, several were in-person programs and others were system-wide interventions that required tailored individual efforts for implementation within a specific system. The 37 interventions for which websites, guides, or other source materials are publicly available are identified in Table A.

When planning or selecting an intervention, organizations should (1) select for the specific health outcomes they are trying to improve (e.g., stress reduction, general well-being), (2) consider through what mechanisms their chosen intervention will initiate those improvements (e.g., knowledge gain, better access to work support), and (3) identify who will most benefit from them. To truly assess impact, it is important to continue postintervention measurement over time, as appropriate. For instance, if a health care system is investigating the impact of a counseling program on depression, symptoms may take many weeks or months to improve or resolve. Therefore, the extent to which an intervention will be "effective" can be dependent on its duration, the outcomes of interest, and how and when they are being measured.

Limitations and Future Directions

Only articles published up to March 2022 were reviewed, potentially omitting important research conducted during the COVID-19 pandemic. This review focused solely on mental health interventions conducted within the health care sector. As a result, there are effective mental health interventions applied in other industry sectors that were excluded. Finally, despite the promising nature of this literature, the efficacy of many of these programs remains largely undetermined because of small sample sizes or insufficient evaluation methods. Most interventions focused on the individual, highlighting an important gap in organization-focused mental health intervention research within health care. While this literature has not yet reached the point of providing a "1-stop shop" for health care workers' mental health programs, the growing breadth of the literature is very promising, as is the current prioritization of these issues at organizational, national, and policy levels. AJPH

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CONTRIBUTORS

W. K Anger had overall responsibility for accuracy, distributed manuscript responsibilities, reviewed titles and abstracts and full articles, organized the article, assessed intervention availability, was the primary author of the Results section, compiled most tables and both supplementary tables, and contributed to the Discussion section. J. K Dimoff reviewed titles, abstracts and full articles; contributed to the Results section; consulted on the assessment and interpretation of mental health issues; established the categorization schema of prevention, intervention, and individual versus organizational categorizations or focus; and was the primary author of the Discussion section. L. Alley selected review process methods, conducted database searches and initial title review, reviewed titles and abstracts and full articles, wrote the Methods section, and made contributions to sections of the Introduction, Results section, supplementary tables, and the Discussion section.

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CONFLICTS OF INTEREST

OHSU and W. K. Anger have a financial interest in Northwest Education, Training and Assessment, a company that may have a commercial interest in the results of this research and technology. This potential conflict of interest has been reviewed and managed by OHSU.

HUMAN PARTICIPANT PROTECTION

This research was based on publicly accessible research publications; no human participants were involved in this systematic review.

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POSTPUBLICATION UPDATE

March 28, 2024: When originally published, the number of interventions in a randomized controlled trial was incorrectly listed. On p. S215, second column, under Study Design, the first sentence should read: "Most interventions employed a randomized controlled (n = 52; 44%) trial or quasi-experimental design (n = 50; 42%), defined as either (1) a single-group study design (no comparison group) with 2 data collection timepoints or (2) a multigroup study with a single timepoint for data collection (postintervention only). An erratum has since been issued. AJPH

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